



**Massachusetts Bay
Transportation Authority**

Commuter Rail Ridership Counts

January 28, 2019



Overview

- ❑ Methodology: How was the passenger count conducted?
- ❑ Ridership Growth and Usage Statistics
- ❑ Factors Affecting Commuter Rail Ridership
- ❑ Comparison with National Transit Database (NTD) Data
- ❑ Operational Impacts
- ❑ Revenue and Fare Collection
- ❑ Appendix: Line-by-line Ridership and Service Changes Summary



Background

- ❑ Historically, commuter rail ridership estimates have been based on manual counts, because:
 - Commuter Rail is an open system with no electronic fare gates to capture transactions;
 - The variation in fare types and fare media (e.g., monthly pass, mTicket, onboard sales) makes it difficult to extrapolate ridership from fare transactions;
 - Only a limited number of coaches have automated passenger counting (APC) devices.

- ❑ The Central Transportation Planning Staff (CTPS) conducted a manual commuter rail passenger counting study in 2012.
 - The results became the baseline estimate of commuter rail ridership.
 - Although MBTA and Keolis use manual conductor counts and periodic station counts for operational planning purposes, the 2012 CTPS study was the last systemwide passenger count.



Methodology

- ❑ CTPS used the same methodology used for the 2012 counts
- ❑ Manual counts of boardings and alightings were taken at each stop for each train on each line
- ❑ Counts conducted April - June 2018; some recounts were done this fall in cases where the original counts appeared to be unreliable
- ❑ Counts done on a normal Tuesday, Wednesday, or Thursday
- ❑ Each train counted on a single day, with individual lines counted over multiple days and the results summed into a single “composite weekday”
- ❑ Full dataset of counts will be released online

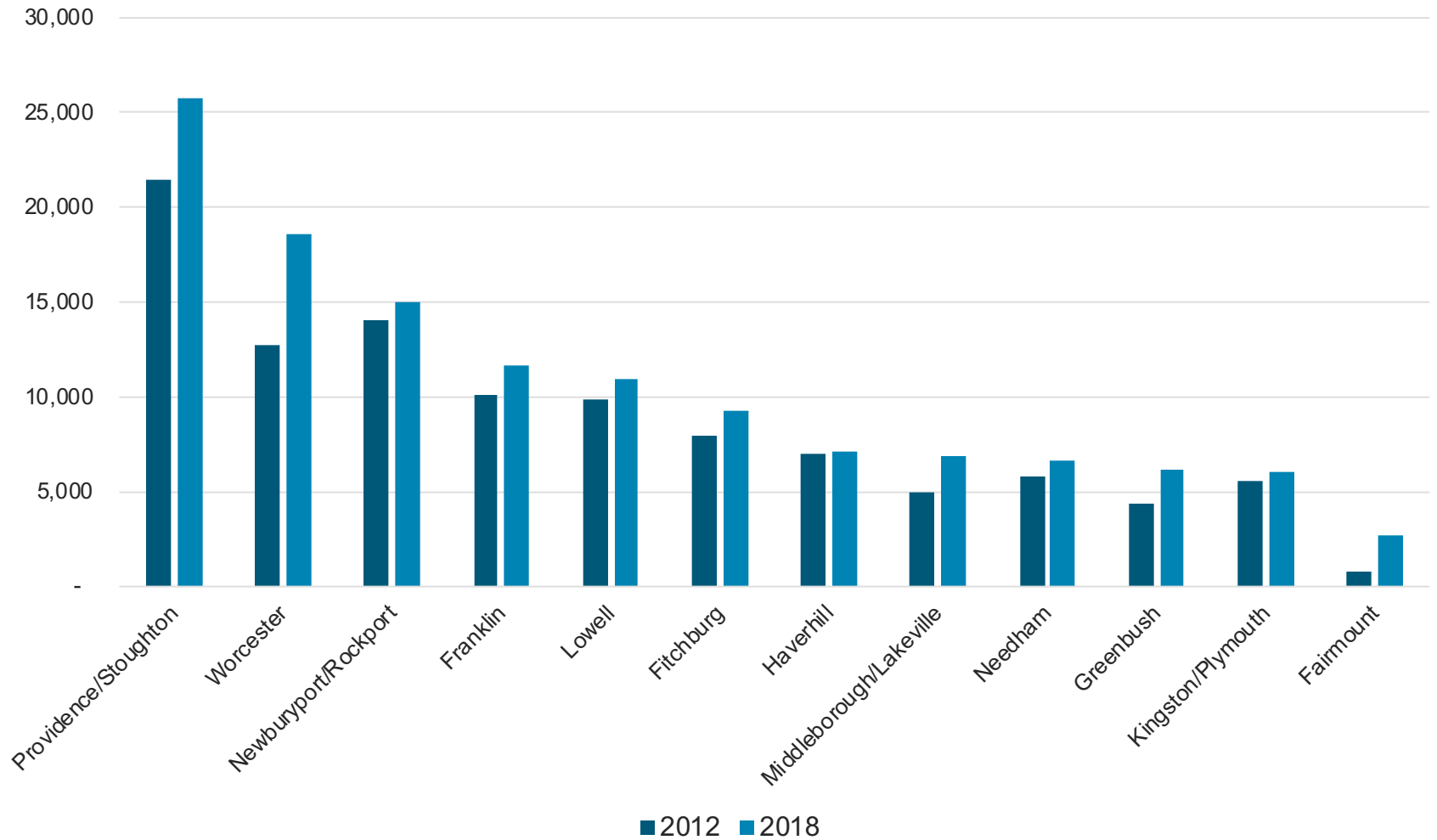


Results: Overall Ridership Growth

- ❑ This ridership increase was expected given service increases and population/employment growth since 2012
- ❑ Between 2012 and 2018 commuter rail ridership grew from 104,574 to 126,754 trips per day, an increase of 21.2%
- ❑ Ridership on the south side increased 28.3%, from 65,839 trips to 84,443 trips
 - Service was increased on four of those lines (Fairmount, Franklin, Providence and Worcester)
- ❑ Ridership on the north side increased 9.2%, from 38,735 trips to 42,311 trips
 - Service was decreased on two lines (Haverhill and Lowell) and increased on two (Fitchburg and Newburyport/Rockport)
 - North side service overall remained relatively constant



Ridership by Line (2012 vs. 2018)



Commuter Rail Usage – What the data tell us

- ❑ The vast majority of commuter rail ridership occurs in the peak period in the peak direction
 - Overall, 83% of the trips in the inbound direction occur during the AM peak and 76% of outbound trips occur during the PM peak
 - While still in line with this systemwide trend, the **Fairmount Line** exhibits significant off-peak ridership.
 - 35% of inbound trips occur outside the AM peak; 42% of outbound trips occur outside the PM peak
- ❑ Similarly, most commuter rail trips end at the terminal stations in the AM peak and begin at the terminal stations in the PM peak
 - On the south side, 86% of inbound trips are destined for South Station and Back Bay, and 86% of outbound trips originate at these two stations.
 - On the north side, 86% of inbound trips are destined for North Station, and 87% of outbound trips originate at North Station.
 - An exception is the **Fitchburg Line**, where 34% of inbound trips are destined for Porter, and 27% of outbound trips originate at Porter.



What explains the ridership increase?

- ❑ The MBTA's Office of Performance Management and Innovation (OPMI) tested many variables to see if patterns in station-level ridership could be explained.
 - Variables included population and demographics, employment, parking, added capacity and other changes in the station area,
 - **OPMI's analysis did not find a predictive relationship at the station level**
- ❑ Although OPMI found only weak correlations line-by-line, the systemwide increase in ridership follows regional trends for population and employment growth.
 - Overall population increased in the Boston region 4% between 2012 and 2018.
 - The Boston metropolitan statistical area (MSA) experienced 12% employment growth over the same time period.



1/28/19

Peer System Comparison

- ❑ Ridership trends at comparable agencies running commuter rail appear to track directionally with population and employment trends in their respective regions.
- ❑ This relationship has been shown historically, and while this effect seems to be lessening on bus and subway systems, the alternative options in many commuter rail systems are less attractive, meaning that people are still making similar travel choices on commuter rail.

Agency	Metro Area	Ridership change from FY12-18 (NTD)	MSA population change from 2012-17 (census)	Change in Average Employment
Metro North	NYC (serving CT and Upstate / Hudson Valley)	3.4%	2.1%	6.8%
NJ Transit	NYC (serving New Jersey)	6.2%	2.1%	6.8%
LIRR	NYC (serving Long Island)	5.8%	2.1%	6.8%
Metra	Chicago	-6.5%	0.1%	5.5%
SEPTA	Philadelphia	-8.5%	1.3%	6.0%
VRE/ MARC*	Washington, DC	5.5%	5.9%	8.8%
Caltrain	SF Bay Area**	40.2%	5.7% (8.7% from 2010-17)	14.6%
Metrolink	Los Angeles / Southern CA	8.1%	2.4%	11.4%

*Washington is served by two agencies. Both are summed together here.

**Caltrain serves the San Jose and San Francisco MSAs, which are combined here.



1/28/19

Comparing Counts to NTD Ridership

- ❑ Our commuter rail ridership data that is reported to the National Transit Database (NTD) each year comes from manual conductor counts
- ❑ Using CTPS data, we annualized the one-day station counts, using seasonal and day-of-the-week factors, to estimate ridership for FY 2018
- ❑ The conductor counts and CTPS results for FY 2018 were very similar, but the NTD data since 2012 shows a downward trend

FY18 Commuter Rail Ridership

Conductor Counts (NTD)	32,859,741
Annualized CTPS Counts	32,753,615

- ❑ In order to address unreliability in manual conductor counts, the MBTA is installing automated passenger counters on all Commuter Rail coaches.



1/28/19

10



Operational Impacts

□ How will MBTA and Keolis use the new passenger counts?

- **Passenger Coach Consists** – MBTA Railroad Operations and Keolis will adjust train consists as needed (i.e., shift existing coaches between individual trainsets to match seating capacity with expected ridership).
- **Train Schedule Changes** – The new passenger counts will be used to inform schedule changes, beginning in spring 2019.
- **Train Crew Staffing** – Analysis is underway to ensure trains are properly staffed based on new passenger data.
- **Parking** – This data will help us prioritize areas for future investment in parking or other first mile/last mile solutions
- **Coach Procurement** – The FY19 CIP includes funding for procuring additional bi-level coaches; MBTA is exploring all procurement options



1/28/19

Commuter Rail and Fare Collection

- ❑ Commuter Rail revenue has increased in line with ridership gains between 2012 and 2018
- ❑ We believe this revenue increase is a combination of increased ridership and better fare collection, along with the effects of 3 fare increases and added service
- ❑ We are working with Keolis to continue to improve fare collection, including:
 - Fare verification initiative at Boston terminal stations
 - RailSales handheld devices for onboard sales
 - MBTA funding additional assistant conductors to staff trains
 - Refresher training for conductors and asst. conductors
 - Coming soon: optical scanning of mTickets using handheld devices
- ❑ The AFC 2.0 team and Railroad Ops will provide an update to the FMCB on implementing AFC 2.0 on commuter rail.



1/28/19

Appendix: Line by Line Analysis



1/28/19

Southside Ridership Growth

Line	2012	2018	Growth	Percentage
Providence	21,497	25,728	4,231	19.7%
Worcester	12,787	18,636	5,849	45.7%
Franklin	10,080	11,671	1,591	15.8%
Middleborough/Lakeville	5,006	6,863	1,857	37.1%
Needham	5,814	6,690	876	15.1%
Greenbush	4,353	6,114	1,761	40.5%
Kingston/Plymouth	5,513	6,089	576	10.4%
Fairmount	789	2,652	1,863	236.1%
Total	65,839	84,443	18,604	28.3%



Providence Line

2012	2018	Growth	Percentage
21,497	25,728	4,231	19.7%

- ❑ The Providence Line continues to be the most heavily used route on the commuter rail system by far, carrying 38.1% more passengers than the second busiest route (Worcester)
- ❑ One new station opened – Wickford Junction – which serves 235 inbound trips and 230 outbound trips daily
- ❑ Service was increased by one inbound train and one outbound train
 - Increase in two inbound AM peak trains – one additional train, one adjustment from the mid-day
 - Increase in one outbound PM peak train



Worcester Line

2012	2018	Growth	Percentage
12,787	18,636	5,849	45.7%

- ❑ The Worcester Line is the second most heavily used line on the commuter rail system; its passenger growth is the largest on the system, and its percentage growth is the second largest
- ❑ One new station opened – Boston Landing – which serves 1,133 daily trips. In addition, Yawkey Station became full service and tripled its ridership, from 827 trips to 2,491 trips
- ❑ Service was increased by 7 inbound trains and 7 outbound trains
 - Increase in four inbound AM peak trains – an increase of 50% in service yielded an increase of 47% in ridership
 - Increase in two outbound PM peak trains and two evening trains



Franklin Line

2012	2018	Growth	Percentage
10,080	11,671	1,591	15.8%

- ❑ The Franklin Line continues to be the fourth most heavily used route on the commuter rail system and is one of only five lines to carry more than 10,000 passengers per day
- ❑ Service was increased by three inbound trains and one outbound train
 - No change in inbound AM peak trains – there was an increase of two PM peak inbound trains and one PM evening inbound train
 - Increase in one outbound PM peak train



Middleborough/Lakeville Line

2012	2018	Growth	Percentage
5,006	6,863	1,587	37.1%

- ❑ The Middleborough/Lakeville Line is now the eighth busiest line in the commuter rail system, up from tenth in 2012
- ❑ During the Wollaston Station closure, customers can ride between Quincy Center and South Station for a subway fare
 - Ridership at the station grew by almost 200%, likely includes riders switching from the Red Line
 - The growth in ridership at the station accounts for one-third of the ridership growth along the entire line
- ❑ Other than typical schedule adjustments, there were no changes to service levels and no additional stops added to between 2012 and 2018



Needham Line

2012	2018	Growth	Percentage
5,814	6,690	876	15.1%

- ❑ The Needham Line is now the ninth busiest line in the commuter rail system, down from eighth in 2012; it was one of only three lines to increase ridership by less than 1,000 trips
- ❑ Other than typical schedule adjustments, there were no changes to service levels and no additional stops added to between 2012 and 2018



Greenbush Line

2012	2018	Growth	Percentage
4,353	6,114	1,761	40.5%

- ❑ The ridership growth on the Greenbush Line was the fifth largest on the commuter rail system and the third highest percentage increase
- ❑ During the Wollaston Station closure, customers can ride between Quincy Center and South Station for a subway fare
 - Ridership at the station grew by over 200%, likely includes riders switching from the Red Line
- ❑ Other than typical schedule adjustments, there were no changes to service levels and no additional stops added to between 2012 and 2018



Kingston/Plymouth Line

2012	2018	Growth	Percentage
5,513	6,089	576	10.4%

- ❑ The Kingston/Plymouth Line is now the eleventh busiest line in the commuter rail system, down from ninth in 2012; it was one of only three lines to increase ridership by less than 1,000 trips
- ❑ During the Wollaston Station closure, customers can ride between Quincy Center and South Station for a subway fare
 - Only two outbound trains make this stop
 - Ridership at the station grew by over 400%, likely includes riders switching from the Red Line
- ❑ Other than typical schedule adjustments, there were no changes to service levels and no additional stops added to between 2012 and 2018



Fairmount Line

2012	2018	Growth	Percentage
789	2,652	1,863	236.1%

- ❑ The Fairmount Line is lowest ridership line in the commuter rail system, carrying less than one-third of the next busiest line; however, its ridership growth was the third highest overall
- ❑ In 2013, three new stations opened, and fares for passengers at stations on the Fairmount Line (excluding Readville) were reduced from a Zone 1 to a Zone 1A
- ❑ In addition to significant MBTA marketing efforts, service was increased by 4 inbound trains and 5 outbound trains
 - Three additional inbound trains in mid-day and one in the PM peak
 - Outbound service was reduced by one pre-AM peak train and increased by two mid-day trains, one PM peak train, and three evening trains



Northside Ridership Growth

Line	2012	2018	Growth	Percentage
Newburyport/Rockport	14,003	14,972	969	6.9%
Lowell	9,817	10,925	1,108	11.3%
Fitchburg	7,924	9,302	1,378	17.4%
Haverhill	6,991	7,112	121	1.7%
Total	38,735	42,311	3,576	9.2%



Newburyport/Rockport Line

2012	2018	Growth	Percentage
14,003	14,972	969	6.9%

- ❑ The Newburyport/Rockport Line is the busiest line on the north side and the third busiest in the commuter rail system
- ❑ Service was increased by three inbound trains and two outbound trains
 - Increase in one inbound AM peak train and five PM peak trains; decrease in one mid-day train and two evening trains
 - Increase in one outbound PM peak train and one evening train



Lowell Line

2012	2018	Growth	Percentage
9,817	10,925	1,108	11.3%

- ❑ The Lowell Line has maintained its rank as the fifth busiest in the commuter rail system. It is one of only five lines that carry in excess of 10,000 passengers per day
- ❑ Service was decreased by five inbound trains and one outbound train
 - Decrease in inbound service throughout the day: one fewer AM peak train, two fewer mid-day trains, one fewer PM peak train, and one fewer evening train
 - Decrease in one outbound AM peak train and an increase of one PM peak train but one less evening train



Fitchburg Line

2012	2018	Growth	Percentage
7,924	9,302	1,378	17.4%

- ❑ The Fitchburg Line had the largest real increase and percentage increase for north side service
- ❑ The Fitchburg Line Improvement Project was completed in 2016. The project included the expansion of service to Wachusett (257 daily trips); the reconstruction of three stations; and track and signal work to increase maximum operating speeds from 60 mph to 80 mph
- ❑ Service was increased by two inbound trains and two outbound trains
 - Increase in one inbound AM peak train and one evening train
 - Increase in one outbound AM peak train and one PM peak train



Haverhill Line

2012	2018	Growth	Percentage
6,991	7,112	121	1.7%

- ❑ The Haverhill Line had the lowest real passenger growth and percentage passenger growth on the commuter rail system, but maintained its rank as the seventh busiest line
- ❑ Service was decreased by two inbound trains and two outbound trains
 - Decrease in three inbound mid-day trains; an increase in one PM peak train
 - Decrease in one outbound AM peak train, two mid-day trains and one evening train, and an increase of two PM peak trains



Stations with the Lowest Utilization

Station	2012	2018	Growth	Percentage
Plimptonville	25	16	(9)	-36.0%
Silver Hill	101	21	(80)	-79.2%
Prides Crossing	28	36	8	28.6%
Plymouth	43	41	(2)	-4.7%
Hastings	38	42	4	10.5%
River Works	129	45	(84)	-65.1%
Mishawum	56	71	15	26.8%
West Gloucester	102	82	(20)	-19.6%
North Wilmington	152	148	(4)	-2.6%
Newmarket	-	163	-	-



Stations with the Highest Utilization*

Station	2012	2018	Growth	Percentage
Ruggles	3,120	4,937	1,817	58.2%
Salem	4,251	4,640	389	9.2%
Mansfield	3,458	4,140	682	19.7%
Providence	2,759	4,005	1,246	45.2%
Attleboro	2,794	3,312	518	18.5%
Route 128	2,709	3,303	594	21.9%
Porter	3,368	3,266	(102)	-3.0%
Beverly	3,095	3,116	21	0.7%
Lowell	3,126	2,986	(140)	-4.5%
Worcester	1,756	2,560	804	45.8%



* Excludes South Station, Back Bay and North Station